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FUSARIUM WILT OF WAXMYRTLE

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Waxmyrtle or southern bayberry *(Myrica cerifera* L.) is a shrub or small tree native to the southeastern coastal plain of the United States. Its natural range extends from southern New Jersey to the Florida Keys and westward and south to southeastern Oklahoma, east Texas, and Central America. Waxmyrtle is also endemic to Bermuda and the West Indies (4, 6). The leaves, bark, roots, branches, and waxy fruits of waxmyrtle have been used for various medicinal purposes, and the wax from its berries is still used to make fragrant bayberry candles, as well as soap and shoe polish in some localities (6). Waxmyrtle is adaptable to a variety of site conditions and is increasingly popular as an ornamental due to its rapid growth, favorable response to pruning, and attractive evergreen foliage (4). The popularity of waxmyrtle as an ornamental in Florida is further enhanced by its native plant status, low maintenance requirements, wildlife food value, and statewide availability.

Alfieri et al. (1), Farr et al. (3), and Sinclair et al. (9) provide catalogs of fungi associated with diseases of waxmyrtle, but only the list provided by Alfieri et al. includes *Fusarium* spp. According to Division of Plant Industry files, *Fusarium* was first reported on waxmyrtle in Florida in 1971, and the frequency of reports *of Fusarium* spp. (esp. *F. oxysporum* Schlect. emend. Snyd. & Hans.) on this host has increased markedly in recent years (Fig. 1). Reports are concentrated in central peninsular Florida (Fig. 2), and according to these reports, *Fusarium* spp. have been isolated from stem lesions or cankers, roots, and xylem tissues exhibiting a characteristic vascular staining, streaking, or discoloration. Infections have been confirmed on plants in natural stands, managed landscapes, and ornamental nurseries.

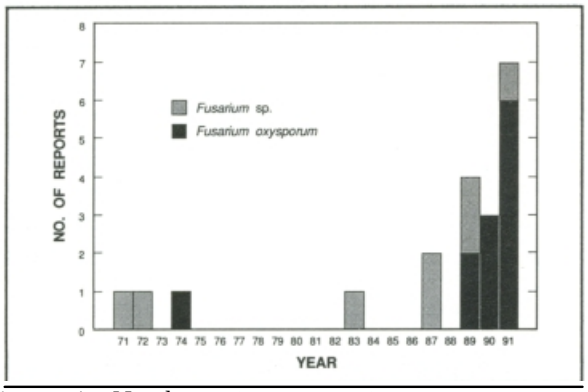

Figure 1. Number *of* reports *of Fusarium* spp. on waxmyrtle by year in the files *of* Florida's Division *of* Plant Industry as *of* November 1991. DPI Photo File #91086

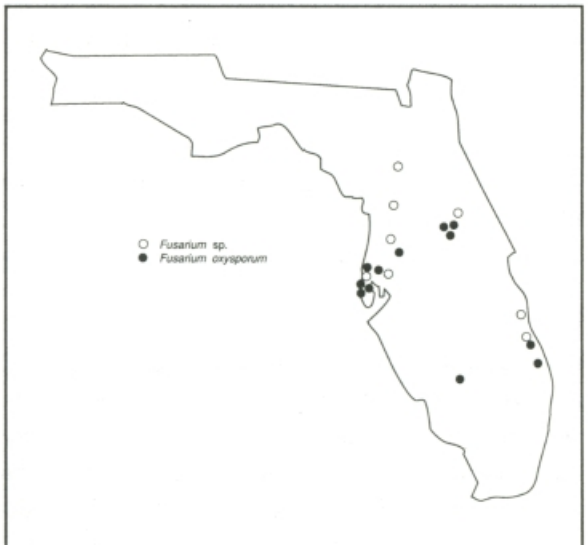

Figure 2. Approximate locations *of* reported case: *of Fusarium* spp. on waxmyrtle in the files of Florida': Division of Plant Industry (1971 - 1991). DPI Photo File #91086

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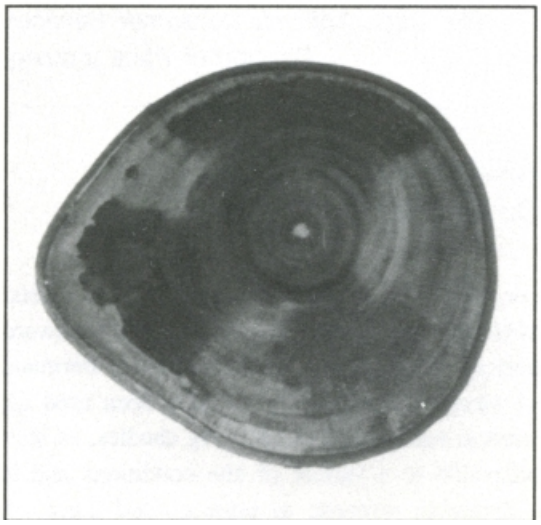

Figure 3. Vascular staining in the xylem (cross section) of a 2-inch stem of waxmyrtle caused by *Fusarium oxysporum.* DPI Photo File #91025

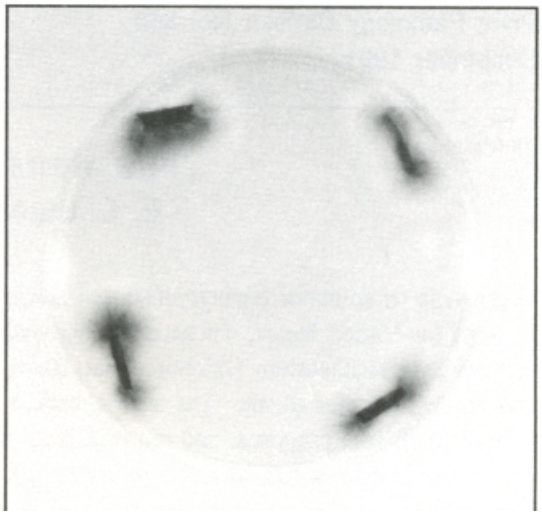

Figure 4. *Fusarium oxysporum* isolated from chips of waxmyrtle xylem exhibiting vascular staining (ref. Fig. 3). DPI Photo File #91025

Formae speciales (i.e., intraspecific variants or taxa based on physiological, biochemical, or pathological adaptation and/or host specialization) of *F. oxysporum* cause vascular wilts in a wide variety of plants, including certain trees (5, 8). Despite the lack of proof of pathogenicity and the identification of a particular forma speciales, this circular is provided as 1) a preliminary description of and 2) an alert to an apparently real and heretofore undescribed disease: Fusarium wilt of waxmyrtle. We believe this disease could become increasingly important as the use of waxmyrtle in Florida landscapes is expanded and intensified.

SYMPTOMS OF THE DISEASE: Little detailed information can be supplied here due to the limited and sporadic nature of the reports of this disease on file (Fig. 1). However, infected plants are characteristically unthrifty and may exhibit stunted, off-color foliage, wilting, and/or death of branches or entire stems. An apparently definitive symptom, observed with increasing regularity, is a distinct pale to dark brown staining or discoloration of the xylem in infected branches and stems (Fig. 3). Sometimes, depending on stage of development, lighting, etc., this vascular staining displays a notably purplish hue (perhaps related to pigmentation of the fungus). Although *F. oxysporum* has been isolated from visible stem lesions or cankers, it is uncertain whether these symptoms are related to the vascular infection. The fungus is consistently isolated from discolored xylem tissues (Fig. 4).

INFECTION BIOLOGY & CONTROL: Again, little specific information can be provided here since research on this disease is lacking. However, based on the known biology of *F. oxysporum* and many of its formae speciales, it is logical to presume that the fungus survives in infested soil by means of thick-walled chlamydospores, and that infections are initiated primarily in the roots (2, 5, 8). It is also possible that infections are enhanced by the feeding of certain plant parasitic nematodes (7), although nematode injury is not necessarily a prerequisite for infection. Mechanical injuries to roots and possibly stems may also facilitate infections. Following penetration into susceptible plants, the pathogen enters the xylem and colonizes the vascular system. Pathogenesis is presumably a complex phenomenon, involving among possibly other factors, fungus-produced cell wall degrading enzymes, toxins, and/or the physical restriction of water flow in colonized xylem tissues (2, 5, 8).

In the absence of specific, proven control measures, management of Fusarium wilt of waxmyrtle must be based on common sense and good horticultural practices. Recognize the risks of pathogen-infested soils (e.g., soils where plants have succumbed to the disease), minimize injuries to landscape plants, practice good sanitation (i.e., removal of infected plants/infested soils) when replacing diseased plants, and avoid the movement or use of infected plants and pathogen-infested soils. Soil fumigation may be useful in certain situations, and the possibility of disease resistant waxmyrtle varieties or cultivars in the future should not be dismissed.

SURVEY & **DETECTION**: Look for stunted, unthrifty, or wilting plants with small or off-color leaves, or plants with partial to complete dieback of branches or stems. Vascular staining, often with a purplish hue is apparently diagnostic.

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